



Dissemination and Standardisation Plan

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1. Executive Summary

The present deliverable D9.1 explains the dissemination plan of the BRIDGET Consortium, which will select the mode of interaction most suited to each particular objective. This will include the classical publication of research results in renowned journals and conferences, and the joint organization of events, such as think-tanks and workshops, demonstrations, and exchange of databases or results.

Perhaps even more importantly, D9.1 elaborates as well on the **standardisation** plan of the project, since BRIDGET partners are very active in the development of *de jure* international standards, and firm believers in their societal impact. The Consortium is convinced that the system architecture/interfaces and technological tools to be developed within this project should not only be based on international standards, but also submitted to the appropriate committees and fora so that BRIDGET results may have an impact on future international standards. This will lower the threshold of their acceptance, and help create a true horizontal market and ecosystem for connected TV and interactive media applications.

2. Rationale for Standardisation

In the BRIDGET work plan, there is a “typical, horizontal” WorkPackage (WP) which takes care of dissemination; but, contrary to what happens in most research projects, this WP has another equally important mission for BRIDGET: **standardisation**. The output of WP9 will be, as in many other EU-funded projects, a set of research papers, web pages, events, and connections with other R&D initiatives — and, unlike in most other EU-funded projects, international standards! The latter, much more than any of the former, together with the fact that BRIDGET tools will be based themselves on previous international standards, will ensure the creation of a true horizontal market and ecosystem for connected TV and contributed media applications. WP9 will have a strong relationship and dependence on WP[3-8], which will provide input for it: the scientific (and potentially commercial) results to be disseminated (and exploited thanks to the plans designed in WP2), but also standardised whenever appropriate.

BRIDGET partners, who are very active in ISO standards and firm believers in their societal impact, have decided to make clear their strong commitment to standards, and maximise the impact by endowing each WP aimed at developing technological tools, namely WP[3-7][⊗], with a Task (T) specifically named “Standardisation”: T3.3, T4.4, T5.4, T6.4, and T7.5, respectively. Besides, T9.2 is devoted to the overall project-level “Coordination of Standardisation Activities”.

Besides, the BRIDGET Consortium will not only promote adoption of its technologies within international standards, but also use the standardisation venues to address opinion formers and decision makers in the industry by direct contact. Indeed, regular meetings of standards committees assemble key professionals and major industrial players and are therefore ideal platforms for a range of activities synergistic with the goals of BRIDGET: exploratory contributions and proposals made by other committee members, BRIDGET proposals to the committee, dissemination of BRIDGET approaches to problems and results, collaborative development of reference software, etc.

[⊗] WP8 deals with “System Validation, Testing and User Trials”

3. Dissemination Strategy

3.1. Partner Internal Dissemination and Networking

All partners in the project will disseminate project results internally in their organisations and via established networks. UNIS will use its strong links with the BBC to promote use of BRIDGET results on the BBC digital platform, and FHG will present BRIDGET technology to partners of the 3D Innovation Center located at the Heinrich-Hertz-Institut in Berlin (www.hhi.fraunhofer.de/en/3d-innovation-center-berlin), a showroom for products, prototypes, development platforms and ideas for 3D technologies, applications and infrastructures. Research and academic project partners will disseminate the project visions and results educational staff and students. The intention is that project ideas shall be integrated in different training activities like student projects, incorporation into lectures, etc.

3.2. Publications in Journals and Magazines

The BRIDGET partners will obviously target well-known and respected journals and magazines (e.g., IEEE's PAMI, ACM's ToG, Springer's IJCV, etc.), and other printed and electronic media for publications of project intermediate and final research results. In particular, the BRIDGET white paper outlining the vision and achievements will be prepared and distributed for publications in media focusing on the stakeholders.

Furthermore, any contribution to ISO/IEC's JTC 1/SC 29/WG 11 (a.k.a. MPEG: Moving Picture Experts Group; see below) included in forthcoming standards will become public in the corresponding ISO/IEC specifications.

3.3. International and National Conferences and Workshops

BRIDGET results will be published as well through research papers at relevant international and national conferences and workshops. There are a large number of such events, so both the Project Coordinator (PC) and the Project Technical Manager (PTM) will keep a critical eye on their quality and expected impact, and will make a qualified selection of appropriate venues for participation. High-profile conferences with high impact (e.g., IEEE's CVPR and ICIP, ACM's SIGGRAPH, EuroGraphics, ECCV, etc.) will be recommended. Conferences and trade shows with high impact on important stakeholders will also be considered. The main objective will be to disseminate the BRIDGET vision and results at large, including presentations, demonstrations and workshops. As mentioned in D2.1, the first BRIDGET workshop has already been held, and another two will be organised during the project lifetime to showcase and validate the latest results, to provide a forum to promote and engage stakeholders, and in general to advance project objectives.

3.4. Public Demonstrations and Results

Public demonstrations and trials are the key elements that will be employed by the Consortium for effective dissemination. The demonstrators will be designed to allow for portability and easy installations, thus enabling presentation at major exhibitions and conferences.

The Consortium plans to make available at the project website (see below) simplified versions of the:

1. BRIDGET Authoring Tools (in binary form and for demonstration purposes only);
2. BRIDGET Player (id.);
3. BRIDGET content samples (for research purposes only).

3.5. Project Website, Newsletter and Online Media

A project website has already been set up at www.ict-bridget.eu and will be regularly updated with all public information that will also facilitate contacts and exchanges with other research and industrial

initiatives on the relevant topics. Videos will be available for high-speed download and streaming, and some project tools may be made available for download by the public. The project will also distribute its own newsletter.

Online media are very effective and the use of YouTube, social media, blogs, etc. will be adopted by the project. Besides, with the agreement of partners involved and to the extent that BRIDGET technologies are mature, CEDEO will introduce BRIDGET technologies to the experimental version of its WimTV service (www.wim.tv), adding support of BRIDGET to its current video services for experimenters to try and comment. Similarly, RAI will make sure the components developed in BRIDGET are easy to integrate into its internal production platforms and online websites, to be able to involve Rai Net (www.rainet.it), a company part of the RAI group in charge of developing and maintaining the full set of the corporate websites, including the main catch-up TV service (www.rai.tv), in disseminating the project results, for instance by making publicly available online BRIDGET demonstrators associated to some published TV programmes.

3.6. Connection with Other European and National R&D Initiatives

Last, but certainly not least, dissemination will be performed towards relevant European and national projects that are working on research and development in the areas related to BRIDGET, such as media analysis and search, 3D scene modelling, coding and reconstruction, authoring tools and Augmented Reality (AR) on mobile terminals. Before the BRIDGET proposal was submitted at the beginning of 2013, related FP7 projects were already reviewed (see section 1.2.6 of Part B of Annex I of the BRIDGET Grant Agreement), and the Consortium keeps committed to looking for projects launched since then, either within FP7 or H2020. Furthermore, each partner will explore their links to related national projects.

Contacts to other ICT projects will generally be handled by the PC, except for exchange of specific technical information, which will be handled directly by the relevant partners. Relations to projects in other EU programs will be coordinated by the PC.

The Consortium is prepared to take active part in the EU Technology Platforms (e.g., NEM) and their related Clusters, or the more recent Public-Private Partnerships (PPPs). For instance, efforts will be dedicated to distribute project news at Cluster meetings.

4. Standardisation Strategy

4.1. Introduction

As stated in Section 2, the BRIDGET Consortium believes that the success of the project will be due to its technologies being based on standards, which will support content creators, broadcasters, network and service operators, mobile terminal manufacturers, and end users, in producing rich and sustainable ecosystems. The standardisation of the BRIDGET system architecture/interfaces and technological tools is one of the key objectives of the project, and will be achieved thanks to the long-term standardisation experience of all technical partners and the credibility they have achieved, both individually and jointly. The project will concentrate its efforts on proprietary technologies for the non-normative parts of existing or emerging standards, and develop (and, where possible, protect through patents) appropriate technologies for new functionalities, and seek their standardisation. The main target standardisation body will be MPEG (formally, ISO/IEC JTC 1/SC 29/WG 11), but particular attention will also be paid the work of other consortia and fora, e.g., DVB, OIPF and X3D. Actually the project stands the change of achieving technology convergence between these different groups thanks to the ongoing efforts of some partners, who are already active in them.

The standardisation bodies, trade associations and government organisations of interest to BRIDGET were already identified at the time of writing the project proposal, as were their existing standards or

recommendations that it would be desirable to “augment” with BRIDGET results. Promoting standards convergence in the fields of media analysis and search, and immersive 3D scene modelling and coding, will be a major outcome of the project. Note that many standards listed below are part of the MPEG family due to their particular relevance to BRIDGET technologies and objectives, and the strong standing of the project members in MPEG. However the project will also target other relevant groups, such as DVB, OIPF and X3D via participating BRIDGET members and official liaisons from the BRIDGET Consortium to/from MPEG. Since we are aware of the large number of other standards committees that could be target of BRIDGET actions and of the cost of being relevant in all of them, we have decided to make MPEG the main target because it is technologically the most relevant to our goals, and has a vast circle of committees in liaison. BRIDGET will incite MPEG to make BRIDGET-related standard technologies known to other committees via liaison statements.

BRIDGET targets in particular the following standardization objectives:

| Standard | Part | Title | BRIDGET Objective | WP |
|----------|-------|---|---|-----|
| MPEG-7 | 3 | Visual | Extension to include new MPEG-7 visual tools | 4 |
| | 6 | Reference Software | BRIDGET software released to MPEG-7 with BSD licence | 4-5 |
| | 8 | Extraction and Use of MPEG-7 Descriptions | Extension to use scenarios for the new visual tools | 4-5 |
| | 13 | CDVS | Extension to video (vs. currently handled still images) | 4-5 |
| MPEG-A | 13 | ARAF | Extension including support of 3D video | 6 |
| MPEG-M | 1 | Architecture | Inclusion of BRIDGET reference model in a new Annex | 3 |
| | 2 | MXM API | Addition of selected BRIDGET engines and APIs | 3-6 |
| | 3 | Reference Software | Release of BRIDGET software to MPEG-M with BSD licence | 7 |
| | 4 | Elementary Services | Selected BRIDGET services are added to the standard | 7 |
| DVB | MHP | Multimedia Home Platform | Extension to include APIs for bridgets and bridged content management (may include profiles for bridget extraction from MPEG TS and processing by MHP applications) | 3 |
| OIPF | Reqs. | OIPF Requirements | Contribution of BRIDGET use scenario and requirements | 2 |
| | Arch. | OIPF Architecture | Extension including BRIDGET interfaces in the OIPF arch. | 3 |
| X3D | * | Extensible 3D Graphics | Extension including support for sensors for AR (joint activity with Web3D consortium) | 7 |

4.2. MPEG

MPEG is developing a range of standards that play a synergistic role with BRIDGET. These are the MPEG standards that are more directly relevant to BRIDGET:

1. MPEG-7 (formally ISO/IEC 15938), Multimedia Content Description Interface, a suite of International Standards (ISs) including Visual Descriptors (MPEG-7 Part 3, formally ISO/IEC 15938-3), Audio Descriptors (Part 4), Multimedia Descriptors (Part 5), Extraction and Use of MPEG-7 Descriptions (Part 8), and Compact Descriptors for Visual Search (CDVS, Part 13). BRIDGET will contribute its most strategic of its findings to MPEG-7, particularly for its Parts 3 and 8, and to extend Part 13, currently dealing only with still images, to video sequences. It can also be expected that contributions will be made on extensions to the existing MPEG-7 audio tools.
2. MPEG-A Part 13 (formally, ISO/IEC 23000-13), Augmented Reality Application Format (ARAF), a multi-version IS with goals remarkably well aligned with BRIDGET objectives. The first version integrates of some relevant existing MPEG technologies, but additional versions will enhance it with other technologies (existing, under development or still to be identified). The work plans of BRIDGET and ARAF are synergistic and well aligned.

3. MPEG-A Part 14 (formally, ISO/IEC TR 23000-14), Augmented Reality Reference Model (ARRM), a Technical Report (TR) developed in collaboration with ISO/IEC JTC 1/SC 24 providing five viewpoints on AR: enterprise, information, computational, engineering and technology. ARRM concentrates on AV augmentation of the user's live hearing and vision of the real world with digital assets where the physical world perception can be direct or indirect.
4. MPEG-M (formally, ISO/IEC 23006), Multimedia Service Platform Technologies, a suite of ISs enabling the easy design and implementation of media-handling value chains whose devices interoperate thanks to the shared set of MPEG technologies embedded in technology and protocol engines defined by MPEG-M Part 4 (formally ISO/IEC 23006-4), Elementary Services, and accessible from applications via a standard API defined by MPEG-M Part 2 (formally ISO/IEC 23006-2), MPEG eX-tensible Middleware (MXM).
5. MPEG-V (formally ISO/IEC 23005), Media Context and Control, a suite of ISs including architecture and information representation formats that enable interoperability between virtual worlds (e.g., digital content provider of a virtual world, gaming, simulation), and between real and virtual worlds (e.g., sensors, actuators, vision and rendering, robotics). Some sensors and actuators specified in this standard will be introduced in one BRIDGET trial.

The typical MPEG approach is to publish a Call for Proposals (CfP) whenever each new major technology is planned to be standardised. The CfP includes a list of the requirements of the new standard and, once the new standard environment is sufficiently well defined, it is developed based on coordinated contributions by experts called Core Experiments (CEs). BRIDGET intends to develop use scenarios, requirements and functionalities for the technologies supporting such use scenarios by exploiting the efficient mechanism outlined in WP2, and to contribute technologies as appropriate from WP[3-7], by first responding to specific CfPs, and then participating in the corresponding CEs. Therefore BRIDGET will be in an excellent position to contribute its ideas at the level of use cases, requirements, functionalities and technologies from the early phases to influence the development of the different versions of the MPEG-7, ARAF, ARRM, MPEG-M and MPEG-V standards.

Besides the obvious advantage of making sure that appropriate versions of those MPEG standards will support the BRIDGET use scenarios, this strategy will also pay off in terms of technologies patented by BRIDGET partners being required to implement the standard.

4.3. Other Standardisation Bodies

A relevant context in which BRIDGET can play an important role is that of the European Broadcasting Union (EBU), whose technical groups develop requirements and technical specifications about the whole domain of media-related technologies, and specifically about media production and distribution. Particularly, its Strategic Programme on Media Information Management (SP/MIM, chaired by RAI) has among its objectives that of developing standards and specifications about media metadata and, in collaboration with the Advanced Media Workflow Association (AMWA), a set of specifications on media-related services called Framework for Interoperable Media Services (FIMS). Media metadata of interest to EBU cover the full range from descriptive high-level concepts to low-level features of video and audio, including metadata enabling connection and enrichment of content, which is the main focus of BRIDGET. Media services are, on the other side, completing the picture by providing a common layer of interfaces supporting vendor-neutral workflow implementations.

In the areas of augmented/mixed reality, other standardization bodies recently initiated activities beside MPEG with its ARAF. Examples include:

1. Augmented Reality Markup Language (ARML), a language under development in the Open Geospatial Consortium (OGC) with the objective of representing data and metadata about objects used for augmentation;
2. Augmented Reality Reference Model (ARRM), the already mentioned TR developed in collaboration with ISO/IEC JTC 1/SC 24;
3. StreamInput, a set of APIs for accessing sensors proposed by Khronos;

4. Point Of Interest (POI), a standard proposed by W3C with the objective to characterize locations and to X3D extensions for AR proposed by ISO SC24 and Web3D.

As one may note, the risk of an inflation of standards for AR is high, and BRIDGET partners are very active in transversal collaborations that have as their main objective to propose to the industry a unique formalism (in the best case) or a clear picture about the place of each standard (in the worst case). This transversal action is the series of AR Standards conferences in which one BRIDGET partner is already involved and plays a key role, and the set of liaisons sent recently by MPEG to ITU, Khronos, W3C, and OGC on the subject. During the project, these coordinating actions will continue.